

Recycling Regulations in Taiwan and the 4-in-1 Recycling Program

Countries around the world have developed policies that aim to reduce municipal solid waste (MSW) and enhance recycling. In Taiwan, MSW management policies are centered on an “extended producer responsibility” (EPR) concept that requires manufacturers and importers of new products to fund recycling. EPR was first established in Taiwan when the Waste Disposal Act was amended in 1988. Since then, new regulations and systems, including Taiwan’s signature “4-in-1 Recycling Program,” have been implemented. This handout provides an overview of the evolution of recycling policies in Taiwan.

Recycling Regulations in Taiwan

Three amendments to the Waste Disposal Act (WDA) make up the foundation of the recycling system in Taiwan:

1. In 1988, Article 10-1 of the WDA required for the first time in Taiwan that manufacturers and importers bear financial responsibility for recycling by forming associations to fund recycling.
2. In July 1997 the requirement changed with another amendment to the WDA that established the 4-in-1 Recycling Program. Instead of forming associations to fund recycling, manufacturers and importers now had to pay a recycling fee to Environmental Protection Administration Taiwan (EPAT) and offer collection of waste for recycling from consumers. The fees would feed into the Recycling Fund, which subsidizes collection and recycling by licensed enterprises and is the key element of the 4-in-1 Recycling Program. The Fund’s establishment marked a milestone in the history of Taiwan’s recycling regulations. This amendment also led EPAT to create the Recycling Fund Management Board (RFMB) to operate the Recycling Fund.
3. In 2001, the Waste Disposal Act was revised again, expanding regulations under Article 10-1 to clarify responsibilities of manufacturers, importers and recyclers under the 4-in-1 Program.

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The provisions of key Articles of the WDA are summarized below.

1. Article 5 of the Waste Disposal Act

Recyclable wastes generated by households and small businesses must be collected for recycling by municipal collection teams. Regulated recyclable waste (RRW) is defined to include 13 categories and 33 items such as metal containers, aluminum containers, glass containers, and plastic containers. The recycling of RRW is eligible for subsidy from EPAT's Recycling Fund. The full list of RRW is given in Chart 1; categories 11, 12 and 13 define waste electric and electronic equipment (WEEE) in Taiwan. In addition, Article 5 enables EPAT to require local environmental protection bureaus (EPBs) to collect certain items including waste paper, CDs, cell phones and chargers for recycling, although those items are not classified as RRW and their recycling is not eligible for subsidy.

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Chart 1: Regulated Recyclable Waste Under the 4-in-1 Recycling System

Containers	1.	waste metal containers(1998)	
	2.	waste aluminum containers(1998)	
	3.	waste glass containers(1998)	
	4.	(1) waste tetra pak brand containers, paper containers(1998) (2) waste paper tableware(1998)	
	5.	waste plastic containers	
		(1)Polyethylene Terephthalate,PET (1998)	(2)Polyvinylchloride,PVC (1998)
(3)Polyethylene,PE (1998)		(4)Polypropylene,PP (1998)	
(5)Polystyrene,PSfoam(1998)		(6)Polystyrene,PS non-foam(1998)	
	(7)other plastics(1998)	(8)bio-plastics(2010)	
6.	waste containers of pesticides(1998)		
Materials	7.	waste batteries(1998)	
	8.	waste automobiles/motorcycles(1998)	
	9.	waste tires(1998)	
	10.	waste lead-acid batteries(1998)	
	11.	waste computer appliances	
		(1)waste laptops(1998)	(2)waste shells(1998)
		(3)waste motherboards (1998)	(4)waste monitors(1998)
		(5)waste hard-disks (1998)	(6)waste printers(2001)
		(7)waste power packs (1998)	(8)waste keyboards (2007)
	12.	waste electrical appliances	
		(1)waste televisions (1998)	(2)waste washing machines(1998)
		(3)waste refrigerators (1998)	(4)waste air-conditioners (1998)
		(5)waste fans(2007)	
13.	waste light bulbs/tubes(2002)		

The first year of regulation is indicated in parentheses for each waste item.

2. Article 15 of the Waste Disposal Act

Manufacturers and importers of new RRW products and their packaging and containers, as well as certain raw materials, shall bear responsibility for collecting these materials for products when they reach their end-of-life. Collection points for RRW items are required at certain retail locations, like supermarkets and convenience stores.

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3. Article 16 of the Waste Disposal Act

The manufacturers and importers described in Article 15 shall register with EPAT and pay recycling fees based on the quantities of new RRW products put on the market. The fee rates are set by EPAT and recycling fees are deposited by the Recycling Management Fund into commissioned banks. Fees paid by manufacturers on items that are exported can be reimbursed by EPAT. EPAT shall establish a Recycling Rate Review Committee (RRRC) to review fee rates based on RRW component materials, per unit weight or volume of RRW, annual cost of municipal RRW collection, the value of recycled or reused RRW products, cost of private collection, recycling and disposal (of non-recyclable components), collection and recycling rates (verified through auditing), auditing and verification costs, the financial condition of the Recycling Fund, and other relevant factors.

4. Article 17 of the Waste Disposal Act

The Recycling Management Fund shall be used for the following purposes: (1) subsidizing licensed RRW collectors and recyclers; (2) the provision of grants and awards for collection and recycling systems; (3) funding municipal RRW collection; (4) funding auditing of subsidized collectors and recyclers; (5) other uses related to general RRW recycling approved by EPAT.

5. Article 18 of the Waste Disposal Act

EPAT shall issue standards for the operations and facilities for the collection, transportation, and recycling of RRW. The Auditing and Certification Groups (ACGs)¹ commissioned by EPAT shall monitor whether subsidized enterprises are in compliance with these standards and certify the volume of collected and recycled RRW to ensure the accuracy of subsidy payments. Collectors and recyclers of a certain scale or larger shall register with local environmental protection bureaus (EPB) and report collection or recycling volumes to the EPBs. Collectors and recyclers may apply to the Recycling

¹ It should be noted that the ACGs do not confer any “certification” to subsidized recyclers as the R2 and E-Stewards programs do in the United States. Instead, the ACGs verify that subsidized enterprises are in compliance with their regulatory requirements and that they receive subsidy amounts corresponding to the amount of material recycled according to EPAT’s standards.

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Fund for subsidies based on these certified volumes. Some enterprises, like WEEE collectors, may not be eligible for subsidy, but must still be licensed to operate by their local EPBs.

6. Article 19 of the Waste Disposal Act

At the time of production or import, manufacturers and importers shall mark new RRW products with EPAT's standard recycling logo. Manufacturers, importers and retailers designated in Article 15 shall install collection facilities and take back RRW products at their end of life.

7. Article 20 of the Waste Disposal Act

EPAT may dispatch personnel or credentialed professionals to enter the facilities of retailers, manufacturers and importers, and RRW collection, storage, transportation and recycling operations. EPAT may also request relevant information from such enterprises. For manufacturers and importers, EPAT may inspect sales or import volumes of new RRW products, distributors and retailers of new RRW products, and raw material suppliers to ensure proper application of recycling labels. For subsidized collectors or recyclers, EPAT may inspect collection and recycling volumes of RRW. When necessary, EPAT may obtain tax records for further inspection.

The 4-in-1 Recycling Program

Before January 1997, although the Waste Disposal Act had required manufacturers and importers to recycle RRW, the collection channels were not coordinated, so the collection rate was low. Furthermore, manufacturers and importers did not invest in recycling facilities installation due to underdeveloped regulations and incentives. In 1997, EPAT created the "4-in-1 Recycling Program" to better connect all parties involved in RRW collection channels, including community residents, recyclers and collectors, local governments, and the newly established Recycling Fund. Through the incentives associated with the Fund, the 4-in-1 Recycling Program has increased recycling rates and reduced the amount of solid waste sent for disposal. The structure of the 4-in-1 Recycling Program is illustrated in Figure 1.

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Figure 1 4-in-1 Recycling Program

1. Components of the 4-in-1 Recycling Program

(1) Community Residents

Community residents make up the foundation of the 4-in-1 Recycling Program. Residents who deposit their waste at local collection points serviced by municipal collection teams must separate their recyclable, non-recyclable, and organic wastes.

In addition to community residents, there are many citizen groups such as Tsu-Chi Foundation (a Buddhist organization), Homemakers United Foundation, and Conservation Mothers Foundation that work to increase recycling in communities and schools. These groups conduct recycling education programs, collect RRW for donation and reuse, and collect RRW for sale to recyclers.

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As of 2011, there were a total of 3,200 communities and 3,500 schools carrying out recycling. Through requirements and voluntary actions, RRW collection points have been installed in public places such as national parks, scenic spots, public transportation stations, as well as chain stores and supermarkets. These expanded collection channels make it convenient for citizens to send RRW for collection and recycling.

(2) Recycling Industries

Private recyclers and collectors buy waste materials, including WEEE, from residents, communities, commercial enterprises and others in order to recover commodities from these wastes and generate revenue in the process.

(3) Local Authorities

Municipalities and local governments organize municipal collection teams to collect RRW and other wastes from community collection sites. They sell RRW and other MSW of value to private recyclers and give a portion of the income back to the local government in order to fund grants for community waste collection sites.

(4) Recycling Fund

The Recycling Fund is the most important aspect of the 4-in-1 Recycling Program because it subsidizes municipal RRW collection as well as private collectors and recyclers who meet EPAT's environmental and safety standards. Under the 4-in-1 Recycling Program, manufacturers and importers of new RRW products, including electrical and electronic equipment, are required to pay fees to EPAT depending on the quantity of items they put on the market. These fees feed into the Recycling Fund, which is managed by RFMB.

Currently the recycling fund collects NT\$7,000,000,000 (NT\$7 Billion) per year from manufacturers and importers, which is distributed to trust funds and special income funds. The trust funds are used to subsidize private collectors and recycling enterprises that meet EPAT standards. Special income funds are dedicated to education, research and development, auditing, grants for

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municipalities and citizen groups, and administration of the 4-in-1 Recycling Program. The Recycling Fund has greatly advanced recycling in Taiwan. For example, money from the nonprofit fund been used to purchase more than 1,300 recycling vehicles for municipalities since 1998 so that collection of recyclables can be carried out more than twice per week. Money from the special income fund has also financed 273 storage facilities for 326 municipal collection squads since 1998.

2. Management Structure

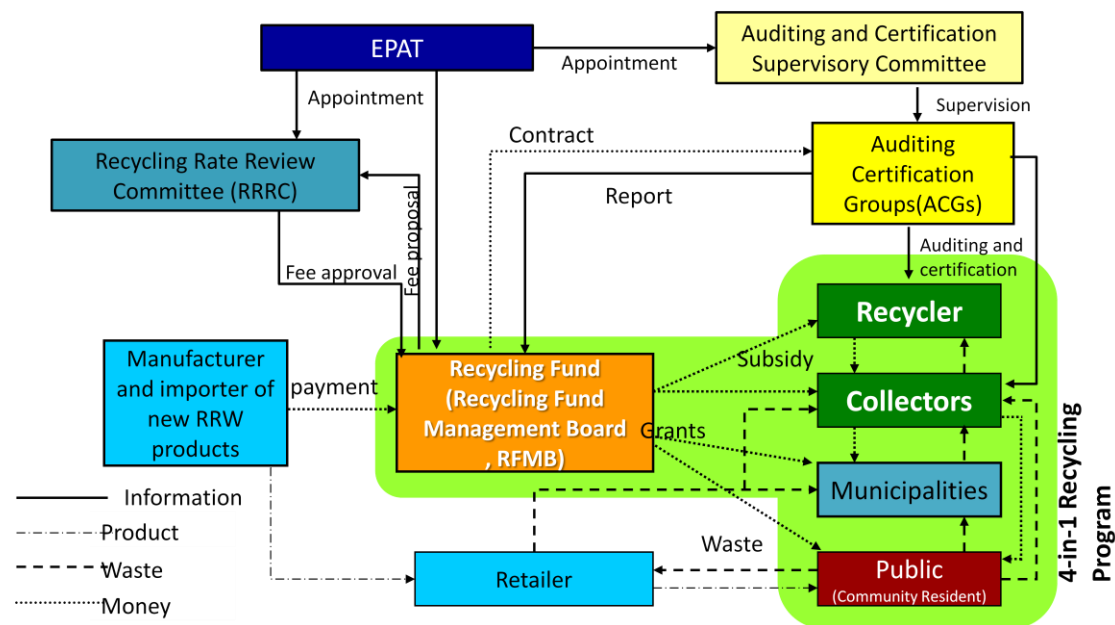


Figure 2 Management Structure of the 4-in-1 Recycling Program

3. Online Reporting Tools

Under the 4-in-1 Recycling Program, online reporting systems are available for manufacturers and importers, recyclers, collectors, auditing and certification groups, and local EPBs.